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SEVERN TRENT SERVICES

STL Sacramento
880 Riverside Parkway
West Sacramento, CA 95605-1500

Tel: 916 373 5600
Fax: 916 371 8420
www.stl-inc.com

November 16, 2000

STL SACRAMENTO PROJECT NUMBER: G0J300145

Rae Mindock
RMT Inc.
222 S Riverside Plaza
Suite 820
Chicago, IL 60606-5901

Dear Ms. Mindock,

This report contains the analytical results for the sample received under chain of custody by STL Sacramento on 10/30/00. This sample is associated with your Riverdale Chemical Co. project.

The case narrative is an integral part of this report.

If you have any questions, please feel free to call me at (916)374-4408.

Sincerely,

Kathy Gill

Kathy Gill
Project Manager

Project name Riverdale
Project number 42202.01
Tech

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STL SACRAMENTO PROJECT NUMBER G0J300145

CASE NARRATIVE

STL SACRAMENTO PROJECT NUMBER G0J300145

SOLID, 8280, Dioxins/Furans, HRGC/LRMS

The associated Method Blank has recovery of 13C-OCDD below the method control limits. Generally, data quality is not considered affected if internal standard signal-to-noise is greater than 10:1, which is achieved for all internal standards in this sample. The MB has no detectable concentration for OCDD and the Laboratory Control Sample is within control limits for all compounds.

The LCS has high recovery of the HpCDF internal standard. Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated internal standard recoveries. The LCS also has the spike compound PeCDF recovery above the control limits and the field sample has high recovery of HpCDF internal standard. There are no positive concentrations detected for PeCDF or HpCDF and thus there is no effect on the data.

There were no other anomalies associated with this project.

STL Sacramento

Quality Control Definitions

QC Parameter	Definition
QC Batch	A set of up to 20 field samples plus associated laboratory QC samples that are similar in composition (matrix) and that are processed within the same time period with the same reagent and standard lots.
Duplicate Control Sample (DCS)	Consist of a pair of LCSs analyzed within the same QC batch to monitor precision and accuracy independent of sample matrix effects. This QC is performed only if required by client or when insufficient sample is available to perform MS/MSD.
Duplicate Sample (DU)	A second aliquot of an environmental sample, taken from the same sample container when possible, that is processed independently with the first sample aliquot. The results are used to assess the effect of the sample matrix on the precision of the analytical process. The precision estimated using this sample is not necessarily representative of the precision for other samples in the batch.
Laboratory Control Sample (LCS)	A volume of reagent water for aqueous samples or a contaminant-free solid matrix (Ottawa sand) for soil and sediment samples which is spiked with known amounts of representative target analytes and required surrogates. An LCS is carried through the entire analytical process and is used to monitor the accuracy of the analytical process independent of potential matrix effects.
Matrix Spike and Matrix Spike Duplicate (MS/MSD)	A field sample fortified with known quantities of target analytes that are also added to the LCS. Matrix spike duplicate is a second matrix spike sample. MSs/MSDs are carried through the entire analytical process and are used to determine sample matrix effect on accuracy of the measurement system. The accuracy and precision estimated using MS/MSD is only representative of the precision of the sample that was spiked.
Method Blank (MB)	A sample composed of all the reagents (in the same quantities) in reagent water carried through the entire analytical process. The method blank is used to monitor the level of contamination introduced during sample preparation steps.
Surrogate Spike	Organic constituents not expected to be detected in environmental media and are added to every sample and QC at a known concentration. Surrogates are used to determine the efficiency of the sample preparation and the analytical process.

Source: STL Sacramento® Quality Control Program, Policy QA-003, Rev. 0, 8/19/96.

Sample Summary
G0J300145

WO#	Sample #	Client Sample ID	Sampling Date	Received Date
DN2TN	1	DSL13	10/26/00 09:45 AM	10/30/00 09:20 AM

Notes(s):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must no be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity, pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weigh

[redacted]

Chain of Custody Record

Quanterra

QUA-4124 0797

Client	Project Manager	Date	Chain of Custody Number
RMT	RAE MINDOCK	10/27/00	42801

Address	Telephone Number (Area Code)/Fax Number	Lab Number	Page / of
222 S. RIVERSIDE PLAZA STE. 820	312-575-0200 / 312-575-0300		Page 1 of

City	State	Zip Code	Site Contact	Lab Contact
CHICAGO	IL	60606		

Project Name	Carrier/Waybill Number
RIVERBANK CHEMICAL COMPANY	

Contract/Purchase Order/Quote No.

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Aqueous	Matrix: Sed.	Matrix: Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis (Attach list if more space is needed): Dioxin 8280	Special Instructions/ Conditions of Receipt
DSC13	10/26/00	9:45		X								X	

RECEIVED IN GOOD CONDITION UNDER COC
OCT 30 2000
INI: GC

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required
☒ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By			1. Received By	10-30-00	0935
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments
Return results ASAP, Call when They are ready

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

LOT RECEIPT CHECKLIST

STL Sacramento

CLIENT RMT PM KG LOG # 62416

LOT# (QUANTIMS ID) 605300145 QUOTE# 38342 LOCATION WIA

		Initials	Date
DATE RECEIVED 10-30-00 TIME RECEIVED 0920		GC	10-30-00
DELIVERED BY	☒ FEDEX ☐ CA OVERNIGHT ☐ CLIENT ☐ AIRBORNE ☐ GOLDENSTATE ☐ DHL ☐ UPS ☐ BAX GLOBAL ☐ GO-GETTERS ☐ STL COURIER ☐ B & B ☐ OTHER		
CUSTODY SEAL STATUS	☒ INTACT ☐ BROKEN ☐ N/A		
CUSTODY SEAL #(S)	TAPE		
SHIPPPING CONTAINER(S)	☐ STL ☒ CLIENT ☐ N/A		
TEMPERTURE RECORD (IN °C)	IR 1☐ 2☒ ☐ OTHER		
COC #(S)	42801		
TEMPERATURE BLANK			
AMBIENT TEMPERATURE	3°		
COLLECTOR'S NAME:	☐ Verified from COC ☐ Not on COC		
pH MEASURED	☐ YES ☐ ANOMALY ☐ N/A		
LABELED BY.....			
LABELS CHECKED BY.....			
SHORT HOLD TEST NOTIFICATION	SAMPLE RECEIVING WETCHEM ☐ N/A		
☐ METALS NOTIFIED OF FILTER/PRESERVE VIA VERBAL & EMAIL	☐ N/A		
☐ COMPLETE SHIPMENT RECEIVED IN GOOD CONDITION WITH APPROPRIATE TEMPERATURES, CONTAINERS, PRESERVATIVES	☐ N/A		
☐ Clouseau ☐ TEMPERATURE EXCEEDED (2 °-6 °C)	☒ N/A	GC	10-30-00
☒ WET ICE ☐ BLUE ICE ☐ GEL PACK			
☐ PM NOTIFIED ☐ NO COOLING AGENTS USED			

Notes: _____

LEAVE NO SPACES BLANK. USE "N/A" IF NOT APPLICABLE. INITIAL AND DATE ALL "N/A" ENTRIES. QA185 8/00 NEK

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
VOA																				
VOAn *																				
____AGB																				
AGBs																				
250AGB																				
250AGBs																				
250AGBn																				
250AGBna																				
____AGJ																				
500AGJ																				
250AGJ																				
125AGJ																				
____CGJ																				
500CGJ																				
250CGJ																				
125CGJ																				
____PB/PJ																				
____PBn/PJn																				
500PB/PJ																				
500PBn/PJn																				
500PBna																				
500PBzn/na																				
250PB																				
250PBn																				
250PBna																				
250PBzn/na																				
____"CT																				
Encore																				
Folder/Filter																				
PUF																				
Petri/Filter																				
XAD Trap																				
Ziploc																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

h = hydrochloric acid **s** = sulfuric acid **na** = sodium hydroxide **n** = nitric acid **zn** = zinc acetate

* Number of VOA's with air bubbles present / total number of VOA's

SOLID, 8280, Dioxins/Furans, HRGC/LRMS

RMT

Client Sample ID: DSL13

Trace Level Organic Compounds

Lot-Sample #...: G0J300145-001 **Work Order #...:** DN2TN2AC **Matrix.....:** SOLID
Date Sampled...: 10/26/00 **Date Received..:** 10/30/00
Prep Date.....: 11/09/00 **Analysis Date..:** 11/12/00
Prep Batch #...: 0315502
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.045	ng/g	SW846 8280
Total TCDD	ND	0.045	ng/g	SW846 8280
1,2,3,7,8-PeCDD	ND	0.028	ng/g	SW846 8280
Total PeCDD	ND	0.028	ng/g	SW846 8280
1,2,3,4,7,8-HxCDD	ND	0.021	ng/g	SW846 8280
1,2,3,6,7,8-HxCDD	ND	0.018	ng/g	SW846 8280
1,2,3,7,8,9-HxCDD	ND	0.018	ng/g	SW846 8280
Total HxCDD	ND	0.018	ng/g	SW846 8280
1,2,3,4,6,7,8-HpCDD	ND	0.034	ng/g	SW846 8280
Total HpCDD	ND	0.034	ng/g	SW846 8280
OCDD	ND	0.096	ng/g	SW846 8280
2,3,7,8-TCDF	ND	0.051	ng/g	SW846 8280
Total TCDF	ND	0.051	ng/g	SW846 8280
1,2,3,7,8-PeCDF	ND	0.019	ng/g	SW846 8280
2,3,4,7,8-PeCDF	ND	0.017	ng/g	SW846 8280
Total PeCDF	ND	0.017	ng/g	SW846 8280
1,2,3,4,7,8-HxCDF	ND	0.016	ng/g	SW846 8280
1,2,3,6,7,8-HxCDF	ND	0.013	ng/g	SW846 8280
2,3,4,6,7,8-HxCDF	ND	0.015	ng/g	SW846 8280
1,2,3,7,8,9-HxCDF	ND	0.016	ng/g	SW846 8280
Total HxCDF	ND	0.013	ng/g	SW846 8280
1,2,3,4,6,7,8-HpCDF	ND	0.014	ng/g	SW846 8280
1,2,3,4,7,8,9-HpCDF	ND	0.018	ng/g	SW846 8280
Total HpCDF	ND	0.014	ng/g	SW846 8280
OCDF	ND	0.030	ng/g	SW846 8280

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	103	(40 - 120)
13C-2,3,7,8-TCDF	99	(40 - 120)
13C-1,2,3,6,7,8-HxCDD	96	(40 - 120)
13C-1,2,3,4,6,7,8-HpCDF	126 *	(40 - 120)
13C-OCDD	100	(40 - 120)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

* Surrogate recovery is outside stated control limits.

QC DATA ASSOCIATION SUMMARY

G0J300145

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	SOLID	SW846 8280		0315502	
	SOLID	ASTM D 2216-90		0306334	

METHOD BLANK REPORT

Trace Level Organic Compounds

Client Lot #...: G0J300145 **Work Order #...:** DPPJV1AA **Matrix.....:** SOLID
MB Lot-Sample #: G0K100000-502

Prep Date.....: 11/09/00
Analysis Date..: 11/11/00 **Prep Batch #...:** 0315502
Dilution Factor: 1

PARAMETER	RESULT	DETECTION LIMIT	UNITS	METHOD
2,3,7,8-TCDD	ND	0.037	ng/g	SW846 8280
Total TCDD	ND	0.037	ng/g	SW846 8280
1,2,3,7,8-PeCDD	ND	0.097	ng/g	SW846 8280
Total PeCDD	ND	0.097	ng/g	SW846 8280
1,2,3,4,7,8-HxCDD	ND	0.077	ng/g	SW846 8280
1,2,3,6,7,8-HxCDD	ND	0.064	ng/g	SW846 8280
1,2,3,7,8,9-HxCDD	ND	0.067	ng/g	SW846 8280
Total HxCDD	ND	0.064	ng/g	SW846 8280
1,2,3,4,6,7,8-HpCDD	ND	0.095	ng/g	SW846 8280
Total HpCDD	ND	0.095	ng/g	SW846 8280
OCDD	ND	0.11	ng/g	SW846 8280
2,3,7,8-TCDF	ND	0.057	ng/g	SW846 8280
Total TCDF	ND	0.057	ng/g	SW846 8280
1,2,3,7,8-PeCDF	ND	0.036	ng/g	SW846 8280
2,3,4,7,8-PeCDF	ND	0.033	ng/g	SW846 8280
Total PeCDF	ND	0.033	ng/g	SW846 8280
1,2,3,4,7,8-HxCDF	ND	0.039	ng/g	SW846 8280
1,2,3,6,7,8-HxCDF	ND	0.031	ng/g	SW846 8280
2,3,4,6,7,8-HxCDF	ND	0.038	ng/g	SW846 8280
1,2,3,7,8,9-HxCDF	ND	0.039	ng/g	SW846 8280
Total HxCDF	ND	0.031	ng/g	SW846 8280
1,2,3,4,6,7,8-HpCDF	ND	0.073	ng/g	SW846 8280
1,2,3,4,7,8,9-HpCDF	ND	0.094	ng/g	SW846 8280
Total HpCDF	ND	0.073	ng/g	SW846 8280
OCDF	ND	0.061	ng/g	SW846 8280

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	105	(40 - 120)
13C-2,3,7,8-TCDF	102	(40 - 120)
13C-1,2,3,6,7,8-HxCDD	45	(40 - 120)
13C-1,2,3,4,6,7,8-HpCDF	60	(40 - 120)
13C-OCDD	95	(40 - 120)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot #...: G0J300145 **Work Order #...:** DPPJV1AC **Matrix.....:** SOLID
LCS Lot-Sample#: G0K100000-502
Prep Date.....: 11/09/00 **Analysis Date..:** 11/11/00
Prep Batch #...: 0315502
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
2,3,7,8-TCDD	2.50	2.68	ng/g	107	SW846 8280
1,2,3,7,8-PeCDD	6.25	6.21	ng/g	99	SW846 8280
1,2,3,6,7,8-HxCDD	6.25	6.09	ng/g	97	SW846 8280
1,2,3,4,6,7,8-HpCDD	6.25	6.68	ng/g	107	SW846 8280
OCDD	12.5	13.3	ng/g	107	SW846 8280
2,3,7,8-TCDF	2.50	2.59	ng/g	104	SW846 8280
1,2,3,7,8-PeCDF	6.25	7.16 a	ng/g	115	SW846 8280
1,2,3,6,7,8-HxCDF	6.25	5.29	ng/g	85	SW846 8280
1,2,3,4,6,7,8-HpCDF	6.25	5.34	ng/g	86	SW846 8280
OCDF	12.5	13.6	ng/g	109	SW846 8280

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	109	(40 - 120)
13C-2,3,7,8-TCDF	110	(40 - 120)
13C-1,2,3,6,7,8-HxCDD	110	(40 - 120)
13C-1,2,3,4,6,7,8-HpCDF	128 *	(40 - 120)
13C-OCDD	105	(40 - 120)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

* Surrogate recovery is outside stated control limits.

a Spiked analyte recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

Trace Level Organic Compounds

Client Lot #...: G0J300145 **Work Order #...:** DPPJV1AC **Matrix.....:** SOLID
LCS Lot-Sample#: G0K100000-502
Prep Date.....: 11/09/00 **Analysis Date..:** 11/11/00
Prep Batch #...: 0315502
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
2,3,7,8-TCDD	107	(70 - 115)	SW846 8280
1,2,3,7,8-PeCDD	99	(71 - 116)	SW846 8280
1,2,3,6,7,8-HxCDD	97	(78 - 116)	SW846 8280
1,2,3,4,6,7,8-HpCDD	107	(73 - 121)	SW846 8280
OCDD	107	(74 - 112)	SW846 8280
2,3,7,8-TCDF	104	(76 - 108)	SW846 8280
1,2,3,7,8-PeCDF	115 a	(73 - 112)	SW846 8280
1,2,3,6,7,8-HxCDF	85	(68 - 119)	SW846 8280
1,2,3,4,6,7,8-HpCDF	86	(72 - 110)	SW846 8280
OCDF	109	(73 - 110)	SW846 8280

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	109	(40 - 120)
13C-2,3,7,8-TCDF	110	(40 - 120)
13C-1,2,3,6,7,8-HxCDD	110	(40 - 120)
13C-1,2,3,4,6,7,8-HpCDF	128 *	(40 - 120)
13C-OCDD	105	(40 - 120)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

* Surrogate recovery is outside stated control limits.

a Spiked analyte recovery is outside stated control limits.

SOLID, D 2216-90, *Moisture, Percent*

RMT

Client Sample ID: DSL13

General Chemistry

Lot-Sample #...: G0J300145-001 Work Order #...: DN2TN Matrix.....: SOLID
Date Sampled...: 10/26/00 Date Received..: 10/30/00

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Percent Moisture	19.6	0.10	%	ASTM D 2216-90	10/31-11/01/00	0306334

Dilution Factor: 1